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DEPARTMENT OF AGRICULTURE.

CENTRAL EXPERIMENTAL FARM, OTTAWA, CANADA

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# POSSIBILITIES OF AGRICULTURE

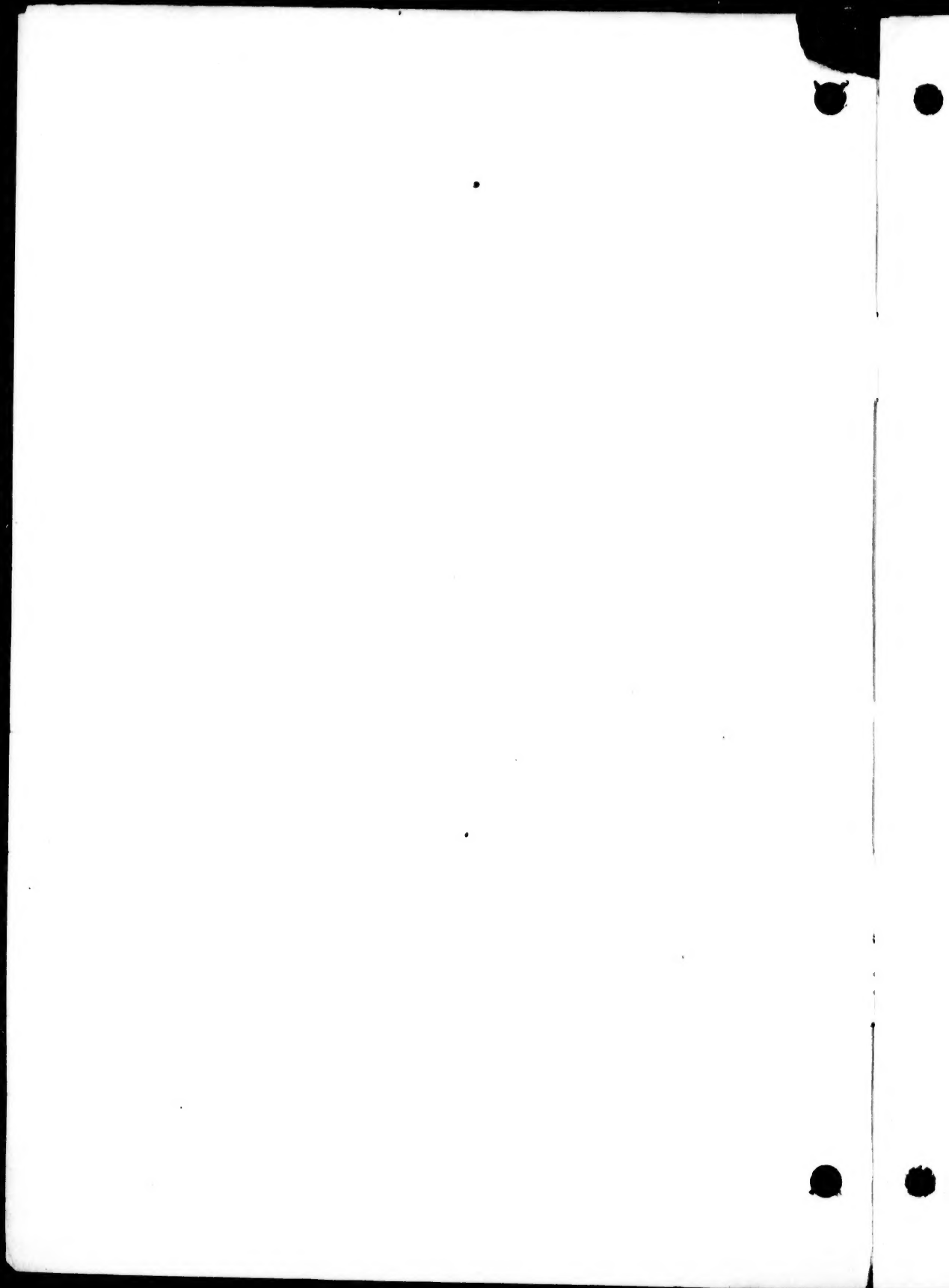
IN THE

## YUKON DISTRICT

### EXPERIMENTAL FARM NOTES

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# ON THE POSSIBILITIES OF AGRICULTURE

IN THE

## YUKON DISTRICT.

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*Director Experimental Farms.*

Many inquiries have lately been received at the Experimental Farm, as to the possibilities of agriculture in the Yukon District. In reply to these, the following notes have been prepared. The information yet obtainable on this subject is meagre, but is perhaps sufficient to indicate the lines along which some success is likely to be had.

In those parts of the Yukon District which are now attracting the attention of the civilized world, owing to the richness of their gold deposits, of which Dawson City is the centre, the summer climate is too cold to admit of much being done in the way of growing grain, fodder plants or vegetables. From particulars obtained from the meteorological records for the seasons of 1895 and 1896 in the recent Report of Mr. Wm. Ogilvie, I find that in August 1895 the thermometer recorded 32° F. and below 5 times, and 40° and below 9 times. In September 1895 it was at 32° and below 18 times, and 29 times it was at 40° and below. That in May 1896 the thermometer was at and below 32° F. eighteen times, and on the 1st, 2nd and 3rd of the month it was 5° above zero. It was at 60° and above only five times during that month, the highest point being reached on the 18th and 23rd, when the thermometer recorded 62° F. The temperature during a large part of this month ranged from 32° to 50° F. The rivers broke up from the 11th to the 17th of May and ran thickly with ice until about the 23rd, after which they were navigable. It snowed on one day and rained on four days that month.

In June 1886 the thermometer was four times at and below 32° F. and 17 times at and below 40° and ranged the greater part of the day time from 40° to 60°. Seven times during this month the temperature went above 70°, and once only, on the 30th of the month, it reached 80°. It rained on 12 days that month.

In July 1896 the hottest days were the 1st and 2nd, when a temperature of 81° was recorded. During the greater part of the month the temperature ranged from 40° to 70° F.; it was at 40° and below 9 times and the lowest temperature was 33° on the 27th. It rained on three days that month.

In August 1896 the highest temperature was 76° F. on the 14th, and seven times the thermometer recorded a temperature above 70°; twice it recorded 32° and below and 13 times 40° and below. The lowest temperature was on the 31st, when the thermometer registered 27.2° F. It rained on eight days during August.

In September the possibilities for the growth of vegetation were very limited. Eight times the temperature ranged from 32° down to 4.8° and 23 times it was at 40° and below, the highest point reached being 63°, which was on the 17th. Only eight times during September was the thermometer above 60°. During the greater part of the month it ranged during the day from 40° to 60° F.

The contingent of North-west Mounted Police which left for the Yukon in 1895 was supplied with thermometers from the Meteorological Service. The observations were begun in November, 1895, and returns have been furnished by Staff-Sgt. Hayne to the close of June, 1897.

The records given of the summer temperatures at Fort Constantine, Cudahy, latitude  $64^{\circ}$  N., longitude  $140^{\circ}$  W. for 1896, agree closely with those of Mr. Ogilvie. The mean temperature of June 1896 was  $53.4^{\circ}$  F., the last frost being recorded on the 7th. The mean for July was  $57.2^{\circ}$ ; August,  $52.5^{\circ}$ . For September it was only  $43.3^{\circ}$ , and winter set in on September 27th 1896. The mean temperature and lowest points recorded for the winter months were as follows:—October, 1896, mean  $26^{\circ}$ ; zero was first touched on the 5th. November, 1895, mean temperature  $5.5^{\circ}$ ; lowest,  $38^{\circ}$  below zero. December, mean  $17.5^{\circ}$  below zero. January, 1896, mean  $38^{\circ}$  below zero. February mean  $23.5^{\circ}$  below zero; and the mean temperature for March was  $7.5^{\circ}$  above zero and that for April  $10.5^{\circ}$ . Between December 19th, 1895, and February 6th, 1896, it never rose above zero, the lowest reading— $65^{\circ}$  below zero—was taken January 27th, and on 24 days during the winter the temperature was at and below  $50^{\circ}$  below zero.

The summer season of 1897, as far as heard from, was warmer than in 1896, the mean temperature of May being  $40.5^{\circ}$  F.; June,  $58^{\circ}$ , the lowest point that month,  $37^{\circ}$ , on the 5th, 6th, 13th and 14th; and the highest,  $86^{\circ}$ , on the 21st. Temperatures as high as  $90^{\circ}$  were observed in the shade in July, but this is said to have been an exceptionally warm and dry month.

With the comparatively low temperatures all through the summer and the prevalence of frost during the early part of June, and again before the end of August, which shortens the growing season at both ends, there seems to be no prospect of much being ever done in the way of agriculture in such a climate. More success however is likely to be had along the margins of rivers than elsewhere. There are a few garden products which mature in a very short period that can be grown in this district fairly well, such as radish, lettuce, and early varieties of cabbage and turnips. These latter do not grow to a large size, but attain sufficient maturity to make them fit for use. To this list may probably be added spinach, early varieties of green pease, also early beets and carrots, and possibly some early sorts of onions might grow large enough for use. Rhubarb also would be worthy of trial, and if the roots were not killed by the severe winter, this plant would furnish a useful substitute for fruit in the early part of the season. Potatoes have been grown in several localities, but unless planted in a suitably sheltered spot, they need some special protection against frost in August, which is apt to cut them down before the tubers reach a usable size.

Mr. Ogilvie says that a "Mr. Patch tried to grow potatoes on the south side of Forty Mile River, but they were invariably killed by frost before they matured. He then sought a nook on the south side of the river where the sun did not get to them until towards noon. They were thus gently thawed out in the shade before the strong sun heat fell upon them, and thus survived the action of the frost." Mr. Ogilvie mentions several other gardens at Forty Mile in which potatoes have been cultivated, but those grown in that locality are watery. He also refers to the experience of a Mr. Harper, at Fort Selkirk, on the Yukon, who has grown potatoes of fair quality. To preserve them from frost he made a large covering of heavy ticking and every evening when frost threatened he suspended this over the potato tops, and lifted it again in the morning, and in this way he was fairly successful. Oats and barley have also been tried, but Mr. Ogilvie knows of no instance where the grain has ripened. These cereals grow tall enough to make excellent fodder for cattle, but the seed for such crops would have to be brought in every year. In 1896 wheat sown at Cudahy developed fine straw and a good head, but the frost killed it before any kernels were formed. The best sites for the growing of vegetables are along the banks of the rivers, where the soil is warmer and sandy. In his report for 1887, when speaking of the agricultural capabilities of

the Yukon basin, Mr. Ogilvie refers to a number of localities in the valleys of the different rivers where crops might possibly be grown. Nevertheless it would appear that the area capable of cultivation is very limited, and with a sudden influx of population, much of the vegetable food needed would have to be taken into the country.

#### FODDER CROPS FOR HORSES AND CATTLE.

For the prompt production of fodder for horses and cattle, or for grain where this is likely to ripen, the following early maturing cereals are recommended, Oats—Prize Cluster, White Wonder, Bonanza, Welcome, and Banner; Barley—Success, Odessa, Rennie's Improved, Mensury, and Common; Spring Wheat—Ladoga, Black Sea, Colorado, and Preston—Spring rye.

Native grasses on which horses or cattle could feed, are said to be scarce and coarse, and make very inferior fodder, and there is not sufficient of these to supply any large demand.

It is probable that the variety of millet known as Hungarian grass (*Setaria Italica*) could be raised as a green fodder crop, as it matures early and makes a good quality of hay if cut as soon as it blooms. The Awnless Brome grass is a very hardy species which has been grown very successfully in the settled parts of the Northwest Territories, east of the Rocky Mountains; and if this can be grown to advantage, it would prove of the greatest value to that country. When the Canadian Gold Commissioner, Mr. Thos. Fawcett, left Ottawa in April, 1897, for Dawson City, I sent with him for test a package of this Brome grass seed; also three varieties of oats, four of barley, three of wheat, and two of pease—all early sorts, also a number of vegetable seeds to be tested. No report on them, however, has yet been received.

#### THE GROWING OF VEGETABLES.

In the neighborhood of Dawson City on the Klondike and probably for 200 miles up the Yukon, or further, similar conditions of climate to those already described prevail. Throughout this area the following varieties of vegetable products are recommended for trial, all of which mature in a short time and have succeeded well on the Experimental Farms on the North-west plains.

*Potatoes.*—Of these only the earliest sorts should be planted, such as Early Ohio, Early Six Weeks, Burpee's Extra Early, Thorburn and Lee's Favourite.

*Radishes.*—All the early sorts, notably the Rosy Gem, Scarlet Olive Shape, Pearl Forcing and Scarlet Globe. These when sown at the Experimental Farm at Indian Head, Assa., N.W.T., from the 25th of May to about the 1st of June have usually been ready for use by the 28th to 30th of June. By sowing at intervals of a few days, a succession of crops may be kept up for some time even in a very short season.

*Lettuce.*—All the earliest varieties are likely to succeed. The following are early sorts:—New Sensation, Boston Market, Black-Seeded Simpson, the Deacon, and All Heart. These when sown at Indian Head about the 1st of May have been fit to use during the first week of June. With repeated sowings, successive crops may be produced.

*Turnips.*—Only the earliest maturing varieties should be sown; these will probably make a growth of 4 to 6 inches in diameter before the season closes. Extra Early Milan, Early Snowball, and White Six Weeks have succeeded well in the North-west. Early turnips sown about the middle of May, at the Indian Head Farm, have been fit for use by July 1st.

*Cabbage.*—Improved Jersey Wakefield, Extra Early Express, Early Epping, Extra Early Etampes, Henley's Champion. These varieties sown in hot bed on April 10th and transplanted to the open ground towards the end of May have been fit for use from July 15th to August 1st.

*Spinach.*—This proves an acceptable vegetable during the summer season, cut and used as greens. The following varieties have been grown very successfully at the Experimental Farms at Brandon and Indian Head: Improved Victoria, Savoy Leaved, and Round Summer. These, sown on the 10th of May, have been fit to use by the 15th of June.

*Garden Pease.*—Of these only the short growing and earliest varieties should be planted. Among the best of those tried are American Wonder, Sunol, Carter's First Crop and McLean's Little Gem. These at the Western Experimental Farms, when sown about the middle of May, have usually matured so as to be fit for the table in six or seven weeks.

*Beets.*—Among the early sorts we have tried are the Improved Early Blood Turnip, Edmund's Blood Turnip, Lentz, Columbia and Eclipse. These, when sown about the middle of May, in the North-west Territories, have usually been fit for use in five or six weeks from the date of sowing.

*Carrots.*—Only the earliest varieties of these can be expected to succeed, such as Early Scarlet Horn, Half-long Scarlet Nantes, and Early Very Short Scarlet. Carrots take somewhat longer than the other vegetables we have mentioned to grow to a serviceable size, but when sown early in May, in the N.W. Territories, they are generally fit for use from the 15th to the 25th of July.

*Onions.*—These usually take longer to mature than the carrots. Among the earliest of those tested at the North-west Experimental Farms are: Extra Early Flat Red, King of the Earliest, and the White Barletta.

*Rhubarb.*—The Victoria and Linnæus are among the earliest and best sorts. Plants can be grown from seed, and if the young seedlings can be wintered by covering them with a good thickness of mulch, the roots should grow large enough, by the end of the second season, to produce good rhubarb the following year. If roots could be transported and should survive the winter, they would produce a fair crop the following season.

In the report of Dr. G. M. Dawson, Director of the Geological Survey of Canada, who explored the Yukon District in 1887, he states that while no cereal crops can be successfully grown or ripened on the coastward side of the mountains that at Telegraph Creek and in that vicinity, on the Stikine River, on the east side of the Coast Range, lat. 58°, wheat, barley, and potatoes are successfully grown with the aid of irrigation. At that time these crops had only been tried experimentally. Since this locality, about 150 miles up the Stikine River, will probably be chosen as the starting point of the line of railway to connect with Teslin Lake; if a sufficient area of good land can be found there, and early varieties of wheat, barley, oats and potatoes can be grown to maturity, the production of such crops in that region may form an important source of supply for the mining districts, which would be about 900 miles nearer to Dawson City than Vancouver or Victoria.

#### NORTHERN POINTS WHERE CEREALS HAVE RIPENED.

On the proposed route from Edmonton there are several points where good samples of grain have been produced. In the spring of 1892, I forwarded samples of seed of early ripening varieties of wheat, barley, oats and rye for test, to a number of the Hudson Bay Co. agents at different points in the North-west country. Through the kind instructions given by the Hudson Bay Commissioner, C. C. Chipman, Esq., these were forwarded to their destination with the Hudson Bay Co.'s supplies. The following samples were received by me in 1893, with particulars as to their growth:—

From DUNVEGAN, lat.  $56^{\circ}$ , about 414 miles north of Winnipeg.

*Rennie's Improved Six-rowed Barley*.—One pound sown May 7th; harvested Aug. 4th. Yield, 16 lbs. Weight per bushel, 52 lbs. Sample fairly plump.

*Prize Cluster Oats*.—One pound sown May 7th; harvested Aug. 11th. Yield,  $13\frac{1}{2}$  lbs. Weight per bushel,  $40\frac{1}{4}$  lbs. Sample bright in colour and plump.

*Bonanza Oats*. One pound sown May 7th; harvested Aug. 11th. Yield, 14 lbs. Weight per bushel,  $42\frac{1}{4}$  lbs. Sample bright and plump.

*Spring Rye*.—One pound sown May 7th; harvested Aug. 21st. Yield, 21 lbs. Weight per bushel, 56 lbs. Sample fairly plump.

The following season I received from Dunvegan an extra good sample of Ladoga wheat, which was bright and plump, and weighed 64 lbs. per bushel. I also received a fine sample of two-rowed barley, which was bright, very plump, and well matured.

From FORT VERMILLION, further down the Peace River, lat.  $58^{\circ} 34'$ , 591 miles north of Winnipeg.

*Ladoga Wheat*.—A very fair sample. Weight, 60 lbs. per bushel. Yield 12 lbs. from one pound of seed. This sample of grain was slightly frosted. The officer in charge reported that the Red Fife wheat sent did not mature at all.

*Prize Cluster Oats*.—Yield, 7 lbs. from one pound of seed. Grain bright and plump. Weight per bushel,  $41\frac{1}{4}$  lbs.

*Rennie's Improved Six-rowed Barley*.—Yield, 16 lbs. from one pound of seed. Grain fairly plump; medium in colour. Weight per bushel,  $51\frac{1}{4}$  lbs.

*Spring Rye*.—Yield, 18 lbs. from one pound of seed. Grain fairly plump. Weight per bushel,  $57\frac{1}{2}$  lbs.

These several varieties of grain were said to have been sown on the 14th of May and harvested on the 23rd of August.

From FORT PROVIDENCE, in the Mackenzie River District, lat.  $60^{\circ} 17'$ , about 710 miles north of Winnipeg, the following were received :—

*Bonanza Oats*.—Sown June 1st; harvested Sept. 17th. Yield, 3 lbs. from one pound of seed. Sample bright and plump; but too small to ascertain weight per bushel.

*Spring Rye*.—Sown June 1st; harvested Sept. 19th. Yield, 4 lbs. from one pound of seed. Sample too small to ascertain weight per bushel. Grain rather small, but fairly plump.

From FORT SIMPSON, on the Mackenzie River, lat.  $61^{\circ} 52'$ , about 818 miles north of Winnipeg.

*Ladoga Wheat*.—Received in 1893. This was sown June 7th and harvested Sept. 22nd. Yield, 12 lbs. from one pound of seed. Weight per bushel,  $62\frac{1}{2}$  lbs. The sample was plump and a small percentage of the grain was frosted. These are the farthest points north in the North-west Territories from which I have received samples of cereals.